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Geographic Information Systems and Libraries: Patrons, Maps, and Spatial Information. Papers presented at the 32nd Annual Clinic on Library Applications of Data Processing, 1995, Urbana-Champaign, Ill.: Ed. Linda C. Smith and Myke Gluck. Champaign, Ill: Graduate School of Library and Information Science, Univ. of Illinois at Urbana-Champaign, 1996. 240p. $30 (ISBN 0-87845-097-1).

Librarians looking for a textbook introduction to the main issues involved in providing information services using geographic information system (GIS) technology will want to look elsewhere before tackling this volume. With some exceptions, this is a book that will best serve those with prior knowledge of GIS. At its best, it makes a valuable contribution to the advanced literature of digital libraries and fills a gap in the literature for the more experienced practitioner, whether librarian, GIS specialist, or other interested party. At its weakest, it suffers from the same faults as many edited proceedings; overall, the chapters do not come together to form a cohesive whole, and there are a couple of papers that contribute little to the volume. The chapters include reports of original research, accounts of practical experiences, and descriptions of important initiatives. The contributors include some of the top names in the field.

Thanks to last year's flurry of publishing activity, both newcomers and more seasoned veterans to GIS services in libraries have an array of resources from which to choose to increase their knowledge of this burgeoning field. As editors Linda Smith and Myke Gluck acknowledge in their introduction, the Thirty-Second Annual Clinic on Library Applications of Data Processing coincided closely with the publication of three special journal issues related to the same topic (p. 1). Of these three journal issues, papers appearing in special issues of *Information Technology and Libraries* (Lutz 1995b) and in *The Journal of Academic Librarianship* (Hernon 1995) provide the basic introduction to GIS and libraries necessary for an appreciation of many of the chapters in the volume under review. All these sources define the basic terms and concepts needed to understand GIS technology.

Geographic Information Systems and Libraries opens with the clinic's keynote address by Mark Monmonier. Author of the 1985 book *Technological Transition in Cartography*, Monmonier looks back at each chapter of his book. In doing so, he gives a concise and clever overview of cartographic advances and policy issues, and he reiterates his frequently on-the-mark predictions related to the impacts of technology and policy on mapping. In addition to being an advocate of getting people to realize that the main product of mapping is information, not a printable image, Monmonier is one of the few people to mention the challenge of preserving electronic cartography. This is an issue of much concern to archivists, but little discussed in the GIS literature related to libraries. Monmonier states, "I am not aware that any library or archive is systematically preserving late twentieth-century electronic cartography. Yet the challenge is enormous because an adequate historical record would include not only maps, data, software, and other artifacts but also information on how people . . . are using cartographic data" (p. 12). Archivists do understand the challenge Monmonier describes, and this is an area ripe for cooperation between librarians and archivists. Like some other papers in the volume, Monmonier's chapter reads like the script of an oral presentation, which, unfortunately, does not always make for an

equally good translation to the printed page.

The remaining papers are grouped by the editors into four general themes: organization and description of spatial data sets, system design and user needs for access, GIS applications, and issues in implementing GIS. The book would have benefitted from introductory essays to each of the four sections to tie the individual papers into the larger context of GIS applications and services. As it is, most papers stand separate from the others, and readers are left to make their own connections between them. The brief introduction given by the editors at the start of the volume does not serve this need; thus, it is difficult for newcomers to form a picture of the large and complex world of GIS.

Mary Lynette Larsgaard, a participant in Project Alexandria, one of the National Science Foundation's (NSF) Digital Library Initiatives (DLI), starts off the first section by describing her experiences in trying to use traditional cataloging methods to catalog spatial data. Her chapter, "Cataloging Planetospatial Data in Digital Form: Old Wine, New Bottles—New Wine, Old Bottles," outlines specific problems she has encountered adapting USMARC and *Anglo-American Cataloguing Rules* to catalog what she refers to as "planetospatial" data in digital form. Anyone wrestling with such issues will benefit from the experience and intelligent insight shared by Larsgaard. In "Finding and Accessing Spatial Data in the National Spatial Data Infrastructure," Michael Domaratz discusses the federal initiatives that have spurred action in organizing and providing access to spatial data. These initiatives are important to an understanding of the current interest in spatial data, and such a discussion certainly belongs in a volume on this subject. What is lacking in the chapter is a clear description of the relationship between the National Spatial Data Infrastructure, the National Geospatial Data Clearinghouse, and the Federal Geographic Data Committee's (FGDC) Content Standard for Digital Geospatial Metadata, and the impact these initiatives have had on the activities of the library community. Experienced library practitioners will find the chapter adequate, but newcomers to the field would be better to first read papers by Marilyn Lutz (1995a) and Elizabeth Mangan (1995) published in the special issue of *Information Technology and Libraries*.

William Moen's chapter, "The Government Information Locator Service: Discovering, Identifying, and Accessing Spatial Data," describes another federal initiative. The Government Information Locator Service (GILS) provides Internet access for the public to search for and retrieve information about federal agency information resources, including spatial data. Moen provides a detailed description of GILS and how the ANSI/NISO Z39.50 standard for information retrieval is being implemented in GILS. The figures and appendixes he includes are useful in illustrating his discussion. This is one of those chapters that anyone, not just librarians, interested in the technical details of GILS would find useful. I could not help wondering, though, what relationship there is between GILS and the other efforts to organize and catalog spatial data, and how much duplication of effort exists between these systems. In an introductory chapter to each section, the editors could have asked such questions, thrown light on such issues, or in some other way provided the cement to hold the chapters more closely together. Finally, Barbara Buttenfield, another participant in Project Alexandria, ends this first section with her chapter, "Geographic Information Systems and Digital Libraries: Issues of Size and Scalability." Buttenfield's contribution is an interesting discussion of how allometric principles might be applied to spatial data collections in digital libraries. She theorizes that "as more information becomes available, it becomes more difficult to access, retrieve, and catalog . . . . The effectiveness of digital libraries will be based in part upon the ability of library scientists to 'scale up' operating procedures" (p. 70).

Retrieval of geographic information in digital libraries is covered in chapters by Ray Larson and Linda Hill. Larson's

"Geographic Information Retrieval and Spatial Browsing," the volume's longest chapter as well as its most graphically rich, covers a lot of ground. Problems and prospects for the retrieval and indexing of geographic information, the characteristics of such information, the systems for automatic indexing and spatial browsing, and examples of Geographic Information Retrieval systems available over the Internet are all discussed. Close study of the chapter, combined with visits to listed Internet sites, would provide a solid education in these areas to those with a strong interest. In "Spatial Access to, and Display of, Global Change Data: Avenues for Libraries," Linda Hill describes retrieval of geospatial information in the context of the U.S. Global Change Data and Information System (GCDIS). She then compares the characteristics of an ideal geospatial retrieval system with five existing systems. Hill finds the current systems lacking, but promising, and encourages librarians to participate in building these systems. Librarians interested in knowing more about the GCDIS will want to supplement Hill's chapter with a look at the recent special issue of *Library Hi Tech* (Rand 1995) on the role of libraries in global change research. The third paper in this section takes a different but no less useful tangent, and provides some baseline information to feed into the design of geographic information services in libraries. It is also the first of a split string of papers related to public libraries. "Geospatial Information Needs of the General Public: Text, Maps, and Users' Tasks," by Myke Gluck, is based on a series of exploratory experiments conducted to determine the geospatial information needs of the general public and the role the public library can play in filling these needs. This, as well as nice companion chapters by Dean Jue and Christie Koontz that appear later in the book, is useful for librarians at all levels of the GIS learning curve. The chapter by Gluck aids forming an understanding of how people go about finding answers to "What's there? and Where's that?" (p. 155). In doing so, it provides convincing reasons for public libraries to consider expanding their geographic information services.

The editors present papers by Robert Lee Chartrand and Christie Koontz as examples of GIS applications. Chartrand's paper, "Emergency Preparedness and Response Challenges for Special Libraries," attempts to persuade special librarians of the need to adopt GIS services because of the technology's critical role in emergency management. Although the opinion might be valid, the chapter adds little to the literature; nor does it provide much insight into how librarians might implement such services. Koontz is more successful in describing how a GIS can be used to create a profile of library markets. Using the Evansville-Vanderburgh County public library system as a model, she walks the reader through the problems and potentials of adapting GIS technology for an important library use. Koontz goes beyond merely detailing an application of the technology by describing the problems and issues that arise in implementing a GIS.

The volume's last section covers GIS implementation and begins with Dean Jue's paper, "Implementing GIS in the Public Library Arena." Jue surveyed staff in all types of libraries that have successfully or unsuccessfully implemented GIS services and then analyzed the responses to determine the factors leading to success. Jue then applied this data to create a decision flowchart for public libraries to use in evaluating the level of GIS service (minimum, medium, or maximum) that should be provided. Not surprisingly, perhaps, Jue found that "the highest priority for a library contemplating introducing GIS to their patrons is to evaluate the number of staff and the ability of that staff to support the GIS without unduly impacting the rest of the library's users" (p. 200). In "The St. Louis Public Library's Electronic Atlas: A Successful GIS Application in the Public Library Environment," Anne Watts theorizes about what made the St. Louis Public Library Electronic Atlas Project a success. Her experience highlights the importance of partnerships, clearly defined goals, and low cost. The final paper of the volume, a four-page description of a CD-ROM of digital spatial data produced by the Illinois Department of Energy and Natural Re-

sources, adds little to the advancement of understanding of GIS in the library environment and provides a lackluster ending to the book.

The editors and publisher are to be commended for getting the book out within one year of the clinic. This rush might have exacerbated the volume's weak points, which include a lack of cohesiveness among the papers, varying utility of the contributions, and a couple of papers that could have been cut or replaced. Yet it remains a unique source on this subject because it reports research efforts and advanced practical experience. As a result, it moves GIS service in libraries forward. The volume also demonstrates how cooperative efforts between librarians and other professionals lead to better service for users. Readers who dip into the volume selectively, based on their interests, will be satisfied and challenged by its contents.—*Ann Zimmerman, John Van Oosten Library, National Biological Service, Great Lakes Science Center, Ann Arbor, Michigan.*

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